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ANALYSIS OF LUCRETIIUS, DE RERUM NATURA I-III

In THE CLASSICAL WEEKLY 8 (1915), 177-178, 185-186, I analyzed Cicero's Cato Maior, endeavoring to group, in appropriate divisions, the thought-elements that logically belong together. By-products of the study were suggestions for paraphrasing afresh, in more logical fashion, this work. Of the need of such analyses and of their value something was said by way of preface to the analysis itself. I had written of this matter in The American Journal of Philology 28 (1907), 58-59, in the course of a paper on Cicero, De Officiis 1.7-8; that paper included a study the De Officiis, entire, and, as the result of that study, many suggestions of changes in the paraphrasing of this work, and in the markings of chapters and sections.

Since students, graduate as well as undergraduate, find much difficulty in following Lucretius's thought, I have undertaken an analysis of the De Rerum Natura. The results, I hope, will not be without interest and profit to scholars also. The present paper deals only with Books 1-3, because it is in these books that the progress of the work is most orderly, and we get the best understanding of Lucretius's modes of work and of his mental operations. These books, again, make a reasonably well-ordered whole, to which, in a sense, the other books are pendants¹.

¹This analysis was begun long before the appearance of the text-edition of Lucretius published by Professor W. A. Merrill, in University of California Publications 4 (1917), 1-258. This edition confirms the belief that a logical analysis of the De Rerum Natura is sorely needed. It would take too much space to point out all the matters wherein I am unable to follow Professor Merrill's grouping of Lucretius's verses. One or two points, however, may be mentioned.

To indicate the major portions of the work Professor Merrill uses 'leading' of various compasses. This device is useful, but it does not go very far; it throws no light at all on the relations of the main parts to one another or to the whole. To indicate the subdivisions of the main parts Professor Merrill uses a complicated system of markings, made more perplexing by the fact that one mark, an italicized letter at the beginning of a verse, is used (so it seems to me) for two different things.

Most confusing is the way in which captions, giving summaries or themes, in capitals throughout, are frequently flung in. These come in, at times, in an incomprehensible way. For example, between verses 43 and 44 of Book 1 is set a caption, consisting of four Greek words. What excuse is there for their insertion? They can apply only to 44-49, which Professor Merrill agrees with others in considering an interpolation. So, after verse 61 comes a space which shows that, to Professor Merrill's mind, a major division of the poem begins here, and then, over verse 62, are set the words LAUS INVENTORIS. Now, I do not believe that a major division of the poem begins here; the *laus inventoris* is not introduced for its own sake (Lucretius, in a word, is not going off on a tangent), but is in place, most logically, as an illustration (justification) of *summa*, 54. See this analysis, I, 2, (a).

I am more and more resenting the introduction of captions and summaries into the body of the text, ancient or modern, that one is trying to understand. Such things militate against understanding, even when they are best done; they are a positive irritant when done as they are, at times, in Professor Merrill's book. Marginal comments meant to show connection of thought (see e. g. Bailey's translation of Lucretius) are a wiser device.

DE RERUM NATURA I-III

Themes: *The Universe exists sine Numine Divom;*
The Soul of Man is Mortal

Book I

I. Introduction (1.1-145).

1. Invocation to Venus (1-43).

(a) Give, Venus, to my poem never-dying charm (1-28)².

(b) Give, Venus, peace to our times (29-40), that I may write with spirit unruffled (41-42), and that Memmius may be in position to attend to what I shall write (42-43).

2. Address to Memmius (50-145)³.

(a) Give me, Memmius, all your powers (50-53), for all will be needed; it took an Epicurus to lay the foundations of the supreme system I am to unfold to you (54-79)⁴.

(b) Do not fear that to follow my discussion will involve you in impiety (80-126).

(1) Fear not the charge of impiety *from* religion: the charge of impiety lies rather *against* religion itself (80-101).

(2) Do not be affrighted by anything the *vates* say (102-126), for

(1') Their tales of life *post mortem* are born of self-interest (104-106); they must tell such tales to keep their hold on men (107-109).

(2') These tales, however, have meaning only for those who do not understand the truth about the soul—the truth I am to tell you. Even Ennius, whom I so greatly revere, erred, because he understood not this truth (110-126).

(c) Hence we must apprehend

(1) the laws of the universe (127-130),

(2) the nature of the soul (130-131), that we may know the real significance of certain phenomena of sickness or sleep which seem to imply that the soul lives on after death (132-135).

(d) My poem will be difficult to understand, particularly because of certain limitations of our Latin tongue (136-145)⁵.

²I have not thought it necessary to set quotation-marks about the summaries or paraphrases of Lucretius's thoughts. My comments I shall relegate, as far as possible, to footnotes, or else I shall print them 'solid' in the text.

³44-49 are wrongly inserted from 2.646-651.

⁴62-79 are, in effect, a commentary on *summa*, 54. Verses 50-79 should be printed as one paragraph.

⁵This passage is a digression. See Note 7.

II. Discussion Proper (1.146-3.1094)⁶.

A. We must understand nature, the laws of the universe. The universe exists *sine numine divom* (1.146-3.30).

1. Preliminary statement (146-148), anticipating the contents of 1.149-3.30: To dispel the darkness I spoke of above we must understand nature⁷.
2. Discussion of the First Basic Principle: Nothing can be produced from nothing (149-214).

This would be clearer if put affirmatively, thus: Behind each particular thing lies (lie) something (some things) which explain(s) it, *sine numine divom*. Compare 158, 167, 190-191, 198. Not even power divine can produce something out of nothing.

- (a) Statement of the First Basic Principle (149-150).
- (b) Explanation of the importance attached to this principle: Men are full of fears now because they can not explain the universe *sine numine divom* (151-154). My first basic principle, by giving the explanation, removes these fears (155-158).
- (c) Proofs (159-214):
 - (1) The phenomena of genera and species—their existence and persistence (159-173).
 - (2) Restriction of specific things to specific seasons (174-183).
 - (3) The fact that time is invariably necessary to the full development of things, plants and animals (184-191).
 - (4) The fact that certain forms of sustenance are necessary to the full development of things, plants and animals (192-198).
 - (5) The limitations of growth in the case of various things, e. g. men (199-204).
 - (6) Summary, prematurely made, interrupting the series of proofs (205-207).

These verses belong, logically, between 214 and 215.

- (7) The fact that cultivation always makes for fuller development (208-214)⁸.
3. Discussion of the Second Basic Principle: Nothing is reduced to nothing. Matter is indestructible (215-264).
 - (a) Statement of the Second Basic Principle (215-216).
 - (b) Proofs (217-264):

(1) The fact that it always takes force to work (apparent)⁹ destruction (217-224).

(2) The fact that things are in the world today (225-237)¹⁰.

(3) The fact that varying amounts of force are needed to work (apparent)⁹ destruction (238-249)¹¹.

(4) The fact that what seems to be destruction of matter is merely change of the form of matter (250-261).

(c) Summary and restatement: Matter is imperishable (262-264).

4. Refutation of a possible objection to the teaching of 159-264¹² (265-328).

In the teaching of 159-264 mention has been made of atoms¹³. Lucretius now stops his main exposition, to inject matter which to-day would be put in a footnote. The passage is a good example of the rhetorical device called *occupatio*, forestalling of criticisms or objections¹⁴.

(a) Preliminary statement: The fact that the *primordia* are invisible is no disproof of their existence (265-268).

(b) Proof, lying in the declaration that there are many things which we know only through their effects, not through sight of the things themselves (269-270). These things include

(1) the winds (271-297)¹⁵;

(2) smells (298-299);

(3) heat, and cold, and sound (300-304);

(4) the particles, substantial, though unseen, whose coming and going, though undetected by the eye, are attested by the phenomena of absorption and evaporation of moisture (305-310);

(5) the particles, substantial, though unseen, whose going away, though undetected by the eye, is attested by the wearing away of a ring, a stone, etc. (311-321);

(6) the particles, substantial, though unseen, whose coming and going, though undetected by the eye, are attested by the phenomena

⁶I justify the insertion of this word by setting *videri*, 224, beside 262. This passage is awkwardly put and somewhat ineffective. What Lucretius means is this. We never really see annihilation take place; what we do see is disintegration, resolution of things, by varying degrees of force, into their parts, parts which are imperishable.

⁷234-237, 248-249 are unnecessary. They dislocate the discussion, by drawing, too soon, inferences. This involves, then, restatement of the second basic principle. See Note 8.

⁸This division is a variation of (1); 238-249 (247) might well have been combined with 217-224.

⁹Another objection might have been raised, that Lucretius had not proved the existence of atoms (matter); to this he makes answer, finally, in 422-425. Elsewhere, too, for convenience Lucretius assumes the truth of something which later he proves. A striking instance is the important matter of the collision of the atoms, the 'blows' they experience, through which nature *gerit res*. Repeatedly, in Book I, he assumes that there are such collisions. Even in Book II, in his formal discussion of the motion of the atoms, he handles in very bungling fashion the matter of the swerve of the atoms, on which the possibility of the collisions absolutely depends.

¹⁰Passages set 'solid' give my comments: see Note 2.

¹¹Cicero is fond of this device: see e. g. Cato Maior 21, 35. Horace, too, likes it: compare e. g. Serm. 1.4.48.

¹²See Notes 7, 8, 10, 11. 278-297 are needless. 278-279 sum up and repeat, needlessly, 271-276. This repetition leads to the comparison in 280-289. This comparison leads to that in 290-294, which harks back to 280-289. Verses 290-294 in turn lead to a second summing up, in 295-297.

⁶See the opening paragraph of this paper for a statement of its compass.

⁷Verses 146-148 repeat 127-130; 1.149-3.30 give the understanding of nature called for in 1.127-130, 1.146-148. Verses 146-148 thus help us to pick up the thread of the thought after the digression in 136-145 (see Note 5). Again, 146-148 easily make the transition from the introduction or preface (dedication) to the discussion proper: they at once sum up 127-135 (145) and introduce 1.149-3.30. In a word, they are pivotal verses (see my note on Seneca, Medea 350-360, The Classical Review 17.46).

⁸In this passage (149-214) we see well the merits and the demerits, the strength and the weakness, of Lucretius's workmanship. He is (1) careful to state clearly what he expects to prove, and (2) careful to draw clearly the inferences suggested to him by his proofs. Indeed, he is overcareful to draw these inferences; the result is, at times, a break in the orderly development of the argument, and repetition, too, since he draws his inferences before he has exhausted his store of proofs. See Note 10.

- of growth and decay. Nature often works through bodies which to us are imperceptible (322-327).
- (c) Summary and restatement (328).
5. Discussion of the Third Basic Principle: There is void in all things (329-417).
- (a) Preliminary statement: Besides matter there is void (329-330). To understand this is of prime importance: one who understands it will not go far astray (331-333)¹⁶.
- (b) Proofs (335-397):
- (1) The fact of motion in the universe implies the existence of void, for without void there could be no motion (335-342).
 - (2) The very existence of life in the universe proves the existence of void, for things could not have been created without motion, and so things could not have been created at all if matter had been massed together, without void, immovably (343-345).
 - (3) The fact that bodies apparently solid are not really solid proves the existence of void: note the trickling of water through rocks, the penetration of cold into our bodies, and of sounds through the walls of houses (346-357).
 - (4) The fact that bodies of equal size differ so greatly in weight proves the existence of void (358-367).
- (c) First summing up: There is void (368-369).
- (d) Elaborate refutation of possible objections to proof (1) above, and, if the objections hold, to proof (2) also (370-397).

Another instance of *occupatio* (see Note 14). The thought of the passage is, 'No matter what others say, no explanation of motion is possible without the assumption of void'.

The passage, which restates and amplifies 335-345, especially 335-342, runs as follows:

- (1) Preliminary statement: Some maintain that motion involves not void, but change of position only (370-376), falsely (377).
- (2) Answers to this dictum (378-417):
 - (1') A body cannot change its position unless there is void into which it can move while it is changing its position (378-383).
 - (2') When two broad bodies, after collision, rush asunder, void is inevitably left: the air cannot fill instantly the intervening space that results from their separation (384-390). Even the theory that, when two bodies under such circumstances spring asunder, the air condenses, does not help; you cannot thus escape the fact that there must be void under such conditions: the condensation would be impossible without void (391-397).
- (e) Second summing up: I have, then, proved that there is void. I could say much more on

this theme, but enough has been said to prove that there is void in the universe (398-417).

See here again Notes 8, 10, 11, 15.

6. Discussion of the Fourth Basic Principle: Besides body (matter) and void there is nothing else (418-482).
- (a) Preliminary statement: All nature consists of body (matter) and void. In void body moves and lives and has its being (418-421).
- (b) Proofs (422-482):
- (1) That body exists is axiomatic¹⁷—it is proved by the ordinary perceptions of mankind. Without belief in the existence of matter no progress in our inquiries is possible: indeed, we shall be without starting point for these inquiries (422-425).
 - (2) Without void we cannot explain the position of things or their motion, i. e. their life (426-429).

This passage repeats 335-345, 370-397.

- (3) No third thing is thinkable: therefore no third thing exists (430-448).
- (1') Preliminary statement: No third thing is thinkable (430-432).
- (2') Whatever exists must either touch or be touchable and so be matter (433-436) or be traversible and so be space, i. e. void (437-439).
- (3') Whatever exists must either act on other things or be acted on (i. e. suffer), or be so constituted that in it <other> things can find position or move: in the former case it will be matter, in the latter it will be void (440-444).
- (4') Summary and restatement (445-448).
- (4) Everything which is not *per se* matter or *per se* void is either a property or an accident of matter or void (449-482).
- (1') Statement I: Everything except matter and void is either a property or an accident of matter or void (449-450).
- (2') Statement II: definitions. A property of a thing is something which cannot be taken away from the thing without destruction of the thing (451-454). An accident of a thing is something whose presence or absence leaves the thing unimpaired (455-458).
- (3') Illustration: Time itself has no independent existence (459-482).
- (a) Statement and argument: Our sense of present, past, and future arises only from the motion of things or from the quiet rest of things. Time, therefore, has no independent existence (459-463). We get the conception of time <and of happenings in time> only in connection with persons or places (464-470), with matter or void (471-477).

¹⁶Verse 334, as it appears in the MSS, is unintelligible.

¹⁷See Note 12.

- (8) Summary and restatement (478-482).
 7. Discussion of the Fifth Basic Principle: The atoms are of *solida simplicitas*, of solid singleness, i. e. uncompounded (homogeneous), and so indestructible (483-598).

(a) Preliminary statement: Matter consists either of atoms alone or of atoms in combinations (483-484). The atoms themselves are uncompounded and so indestructible (485-486), hard as it is to believe this doctrine (487-497). But reason and the constitution of the world constrain us to believe it (498-502).

(b) Proofs (503-598):

Part One: The atoms are solid, and without void (uncompounded, homogeneous) (503-527).

(1) Since, as we have shown¹⁸, the universe consists of but two things, matter and void, matter must somewhere and somehow exist by itself, unmixed with void, and void must exist by itself, unoccupied by matter (503-509). There are, therefore, atoms, things without void, completely solid (510)¹⁹.

(2) All things not themselves atoms consist of combinations of atoms with void²⁰. The function of the atoms in such combinations is to contain (surround) the void: only things themselves solid (and without void) can discharge that function (511-517). We see at once how, when the combinations are dissolved, the matter that, with void, entered into the combinations remains itself imperishable. We thus have an explanation of the persistence of the universe (518-519).

(3) The universe cannot be explained on any other theory than the one just advanced [in (1), (2)], i. e. the theory that matter, absolutely uncompounded (solid), without void, and void, wholly unoccupied by matter, exist in alternations, for, plainly, the universe is neither omnipresent matter nor space entirely unoccupied (520-527).

Proofs (1), (2), (3) belong closely together, in one sequence: they deal with the solidity of the atoms. On the demonstration of this doctrine depends the demonstration of the indestructibility of the atoms (528-539), to which we now proceed.

Part Two: The atoms are indestructible (528-598):

(4) Since the atoms are uncompounded, homogeneous, solid, without void, they cannot be split into parts, or penetrated, or destroyed by any of those forces that, before our eyes, bring to an end the combinations of atoms with void (i. e. the *res genitae*, *genita*) to which reference was made above <in 484, 511-519>. These forces have power to

destroy things only because there is void in things (528-539).

(5) Any other view of the atoms is inconsistent with our first and second basic principles, especially the second²¹, since, had the atoms not been imperishable, things in the universe would have been reduced to nothing, and we should have to hold that the existing universe had been recreated out of nothing! (540-550).

(6) The fact that there is still a universe, and the phenomena of the <destruction of things, of the> conception of <those> things <again> and their development <again> to full maturity within definite periods themselves prove that the atoms are indestructible, especially if we remember how much swifter the processes of dissolution are than the processes of restoration (551-564).

Here, as often, Lucretius requires his readers to supply part of his thought. The insertion of the words included above in angular brackets I justify by 560, 561-564.

Part of this argument was used above, 225-237, in the discussion of the second basic principle. See this Analysis II, A, 3, b, (2). (6) is, of course, an elaboration of (5).

(7) My theory²² explains the universe: no other will. The atoms are solid, yes, but through admixture of void with such atoms soft bodies can be produced. But, if the atoms themselves were to be soft (perishable), hard bodies would be incapable of development. Soft bodies would form no proper substratum (underlying principle) of the universe (565-576).

(8) To suppose that the atoms are perishable leads to the necessity of supposing that bodies, i. e. the *res genitae*, the *genita*, the combinations into which the atoms enter with void, are themselves imperishable—an absurd supposition, since such bodies are plainly perishable (577-583).

Here again Lucretius fails to give full expression to his thought [see above, under (6)]. To 578-580, *tamen . . . periculo*, we must add something like, 'but that is impossible, since in the course of endless ages they surely were subjected to countless blows'. With this unexpressed part of his thought rather than with what he actually says verses 581-583 are closely connected. Those verses mean: 'Since, then, objects are subjected to countless blows, and since, as our senses tell us, objects are in fact breakable, we cannot believe that the objects which now exist in the universe have existed through all eternity. They must be reproductions' (560, 561-564).

(9) The persistence of genera and species proves the indestructibility of the atoms (584-598).

This argument was used above: see A, 2, c, (1).

¹⁹See this Analysis, II, A, 5-6.

¹⁸Though Lucretius talks here both of matter and of void, his real concern is, of course, with matter (the atoms). This explains the form of utterance in 510. See also the remark below, between 7, b, (3), and 7, b, (4).

²⁰This was proved in 329-417. See this Analysis, II, A, 5.

²¹See this Analysis, II, A, 2-4.

²²Summed up in 569.

8. Discussion of the Sixth Basic Principle: The atoms have 'parts', but those 'parts' cannot be separated from one another (599-634).

(a) Elaborate preliminary statement (599-614):

Arguing from the fact that everywhere about us things have an extreme point, a 'least', we conclude that the atom too is made up of 'least', which may in a sense be called its 'parts', but are inextricably bound together, not separable from the atom (599-608), so that we are right in describing the atom as of *solida simplicitas*. In a word, the atom is an indissoluble group of imperishable 'parts' (609-614).

(b) Proofs (614-632):

(1) If there is no 'least' in the atom, i. e. if the process of subdivision in the atom goes on indefinitely, the tiniest bodies in the universe and the universe itself will both be infinitely divisible and so equal each to the other (614-622)—an absurd doctrine: the atoms are solid and immortal (623-627).

(2) The assumption that everything is infinitely divisible leads to another absurd result: if you keep on dividing, you will get something without extension and so incapable of discharging the functions of matter (628-632).

9. Elaborate *occupatio*: a refutation of the physical theories of the Pre-Socratic philosophers (635-920).

Part One (635-704):

(a) Preliminary Statement. Those who make fire the basic substance of the universe are wrong—Heraclitus among them, for all the reverence some light-headed persons accord him for his dark sayings (635-644).

(b) Proofs (645-704):

(1) This theory leaves unexplained the variety of things in the universe. Fire can only be condensed or rarified. Now, the essential quality or characteristic of fire is heat (and heat alone): hence the condensation and the rarification of fire, the only processes of which fire is capable, would give us only varying degrees of heat—not one thing else (645-654). Compare (5), below.

(2) But even this meager result is impossible on Heraclitus's view, for he and those who think as he does deny the existence of void. Hence, on their theory, (1) the condensation and the rarification of fire would be impossible (655-659), (2) all things in the universe would consolidate into one (660-661), a something incapable of emissions from itself, a something, therefore, quite unlike fire, which emits light and warmth, and so clearly has void in it (and hence is not simply all fire). They thus doubly contradict their own basic doctrine (663-664).

(3) If they hold that somehow, by a process different from condensation and rarification, fires can combine and in so doing change their substance (and so produce new bodies), a worse fate awaits them, since their basic substance will, on that view, change its nature, will lose its identity (and so perish), the universe will come to nothing, and, if recreated, will be recreated out of nothing. All this is in conflict with our first two basic principles <see this Analysis above, II, A, 2-3> (665-674).

(4) Only the true view, *my* view, of the atoms, as things imperishable, varied, of nature unalterable, capable of divers arrangements, will account for the existing universe (675-679). Compare (6) below.

(5) If fire were the one basic thing, then, whether aught were added to fire or aught were taken from it, however much the order of the parts of fire might be changed, we should have fire and fire only (680-683). Compare (1) above.

(6) No, the only true view is *my* view of the atoms (684-689). Compare (4) above.

(7) In saying that fire is the one basic principle, and that all things are fire, Heraclitus absurdly flies in the face of our senses, our one criterion of truth: the senses plainly see that things other than fire exist (690-700).

(8) If one must find a single substance, why choose fire, of all things, as such basic substance? Why postulate the existence of fire, while denying the existence of all else? To do that is as absurd as to reverse the process (701-704).

C. K.

(To be continued)

ARCHAEOLOGICAL NOTES FROM ENGLAND

I write these lines on July 5, 1919, at five minutes' distance from the British Museum, where this afternoon I have found the Demeter of Knidos finally liberated from the casing which only two days ago still enclosed her. Practically all the sculptures and vases in the world's most precious repository of ancient art have now been restored to the public gaze, after a long period of protection against the perils of aerial bombardment. The delicate operations of packing, storing, and replacing have been carried out with practically no damage to the objects, although these included both heavy, bulky marbles, such as the pediment figures of the Parthenon and the colossal group that once surmounted the Mausoleum, and delicate pottery like the white-ground Attic lekythoi. The staff of the British Museum have earned the gratitude of all lovers of antiquity by their capable performance of this task: for the nature of some of the risks to which famous works of sculpture